The Chesapeake Bay

District of Columbia

Fisheries and Wildlife Division

The Chesapeake Bay

- The Chesapeake Bay is the largest estuary in the United States
- Forty-six major rivers and nearly 400 lesser creeks and streams feed the Chesapeake Bay.

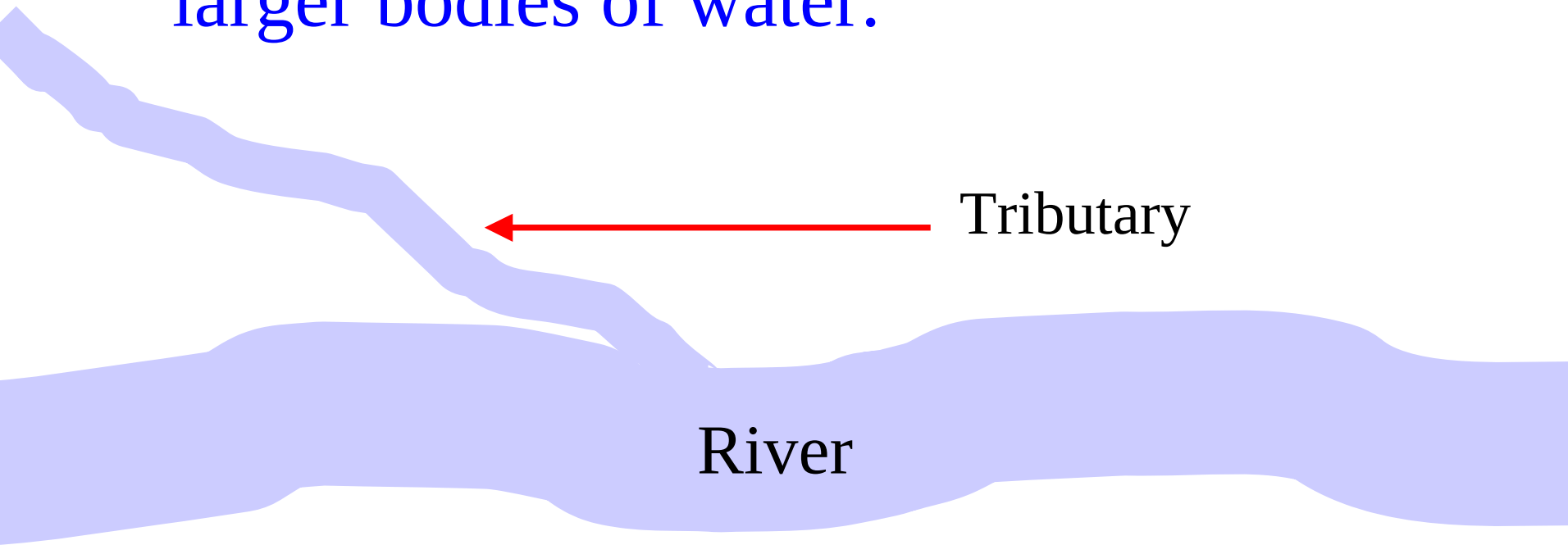
QUICK FACTS

- The Chesapeake is 200 miles long.
- The Bay is between 4 and 30 miles wide and has an average depth of 28 feet.
- One of the largest producers of Blue Crabs in the world (~55 million annually)
- The name Chesapeake Bay comes from Native American origin and means “Great Shellfish Bay”.

Connecting with the Bay

What is a tributary?

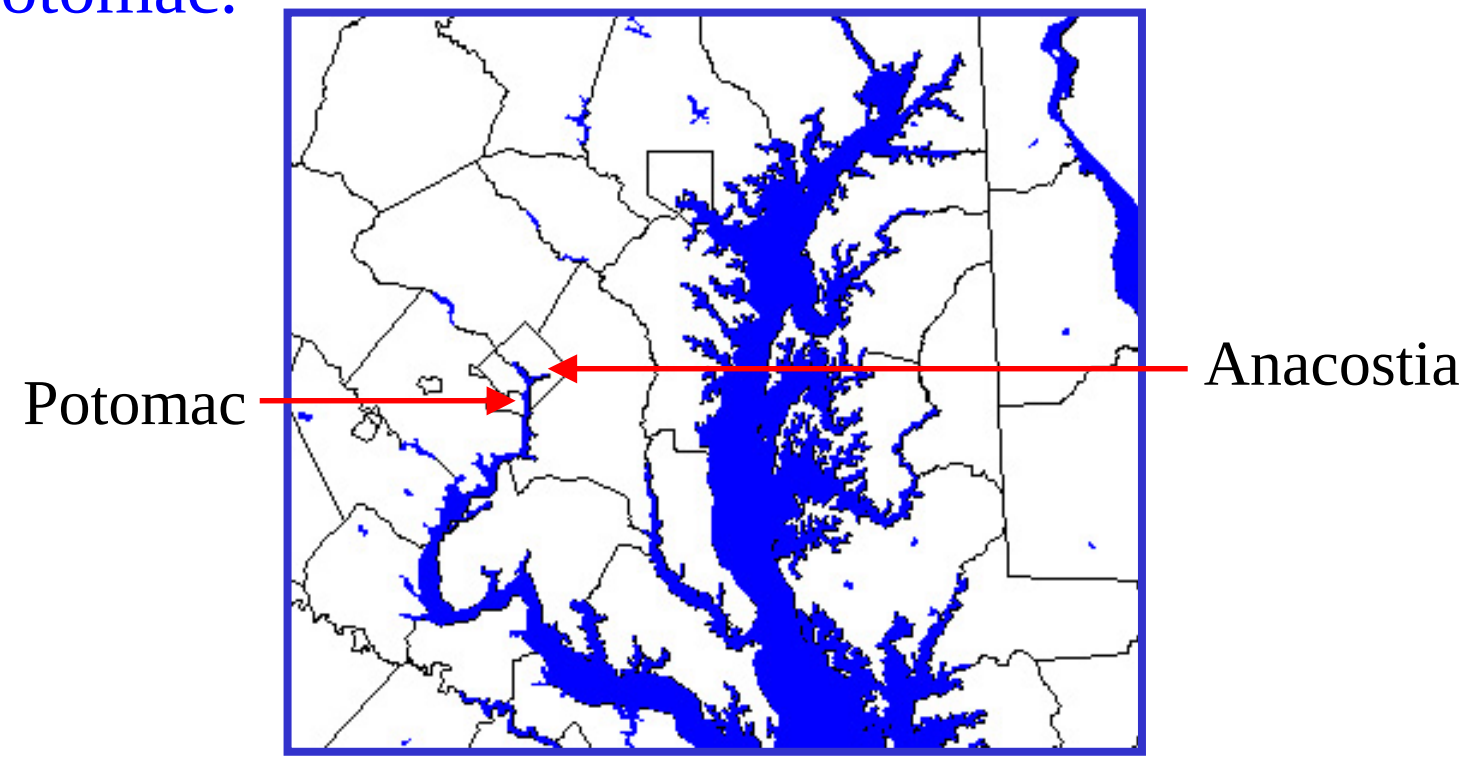
Bodies of water that drain or empty into larger bodies of water.



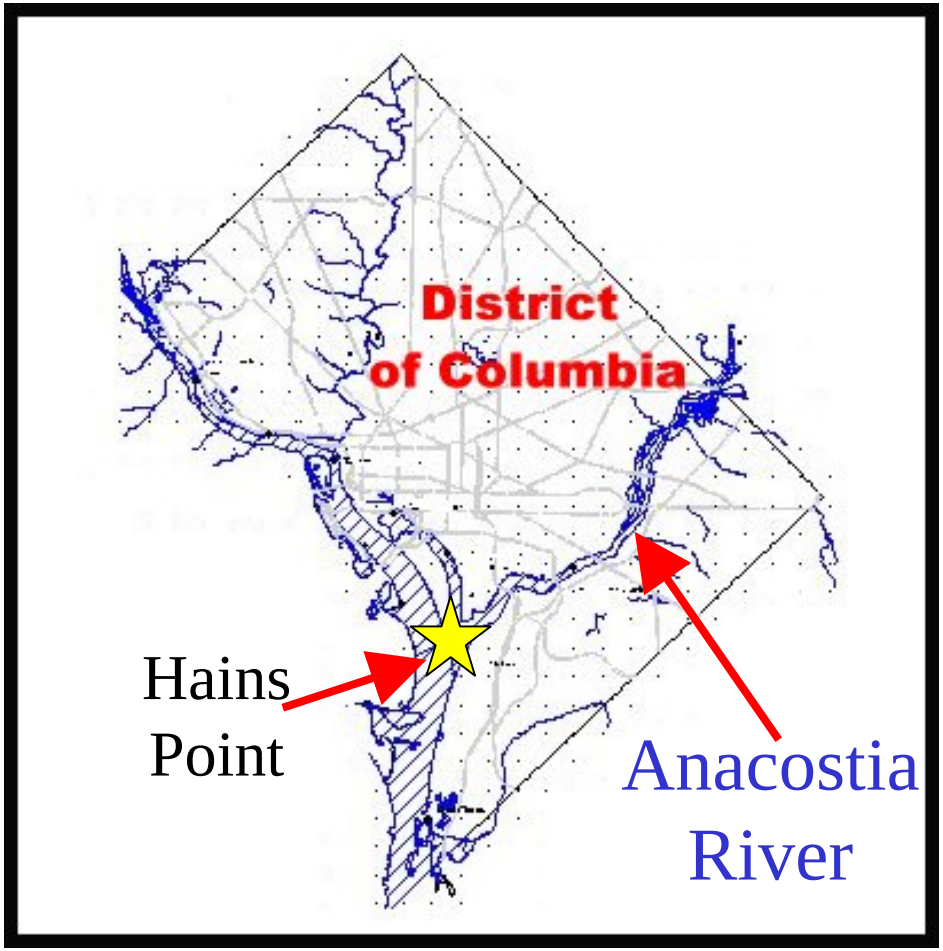
Connecting with the Bay

What body of water in the District of Columbia is a tributary of the Chesapeake Bay?

The Potomac river, the Anacostia is a tributary of the Potomac.

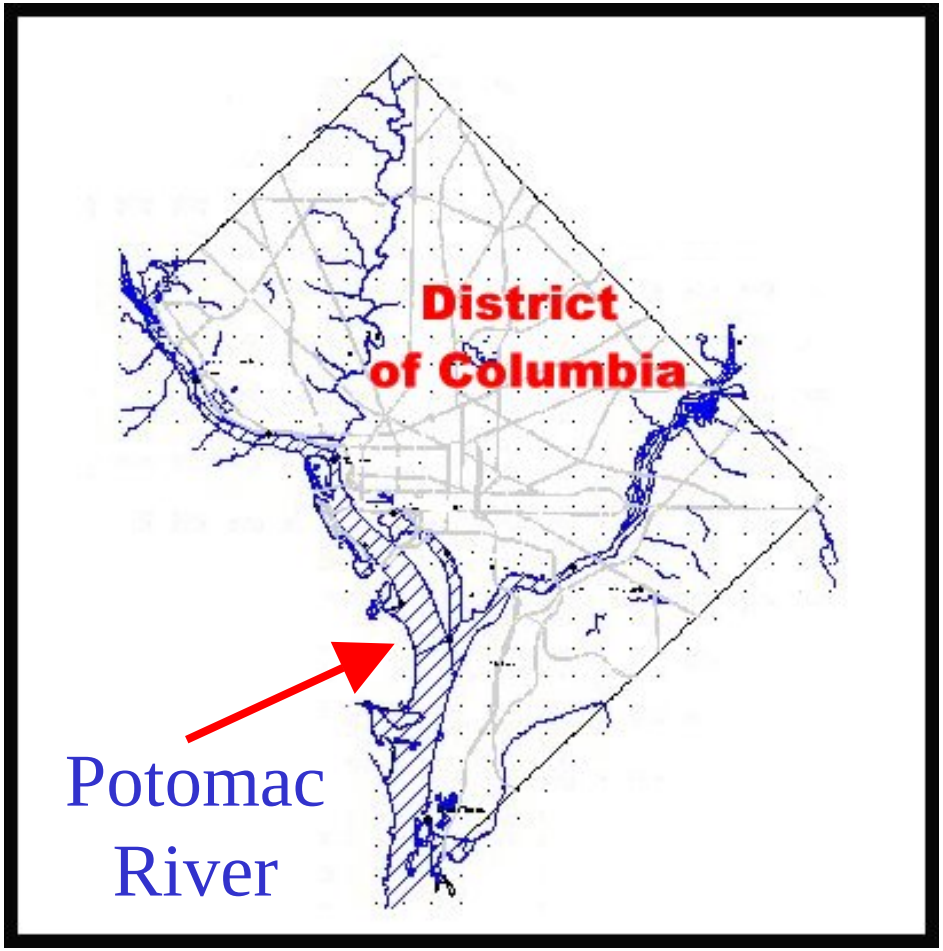


The Anacostia River



The Anacostia is a tributary of the Potomac river. Its headwaters (place of origin) are located in Bladensburg, Maryland. The river is 8.7 miles long with 2 miles in Maryland and the remainder in the District. The Anacostia meets the Potomac at Hains Point.

The Potomac River



The Potomac river is a tributary of the Chesapeake Bay. Its headwaters are located in Fairfax Stone, West Virginia. The river is 383 miles long with about 40 miles of shoreline in the District. The Potomac river provides about 75% of the potable water for the metropolitan Washington area. The Potomac accounts for one-fifth of the total freshwater influx to the Chesapeake Bay.

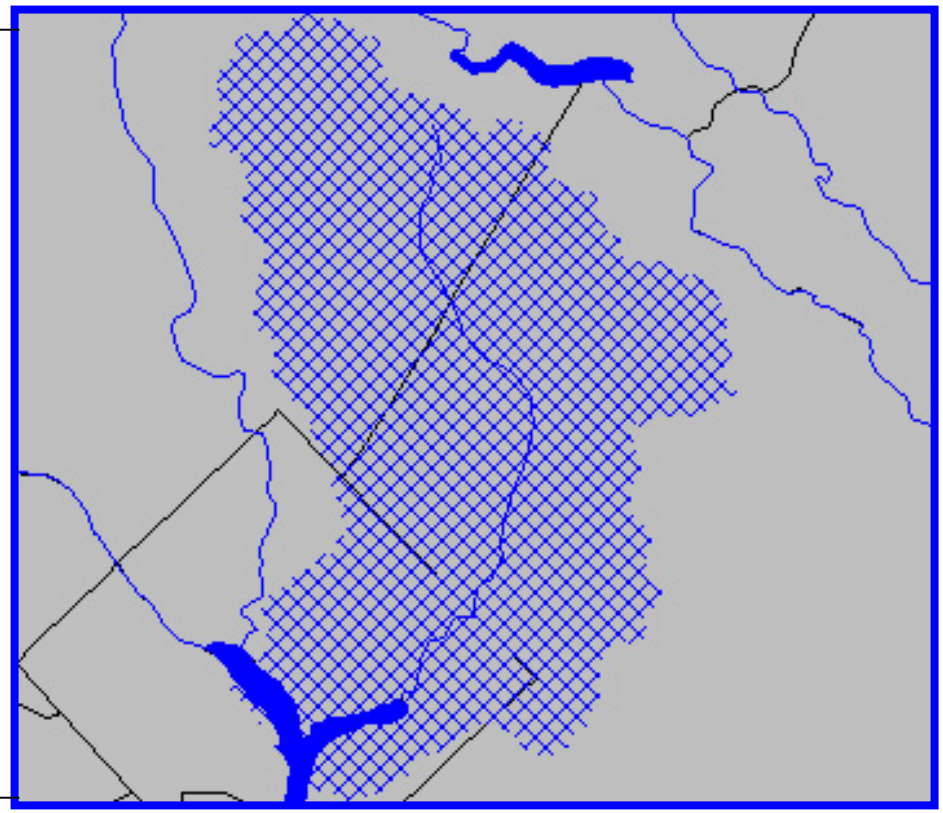
Watersheds

What is a watershed?

A land area in which water, snow and ice drain into a common body of water.

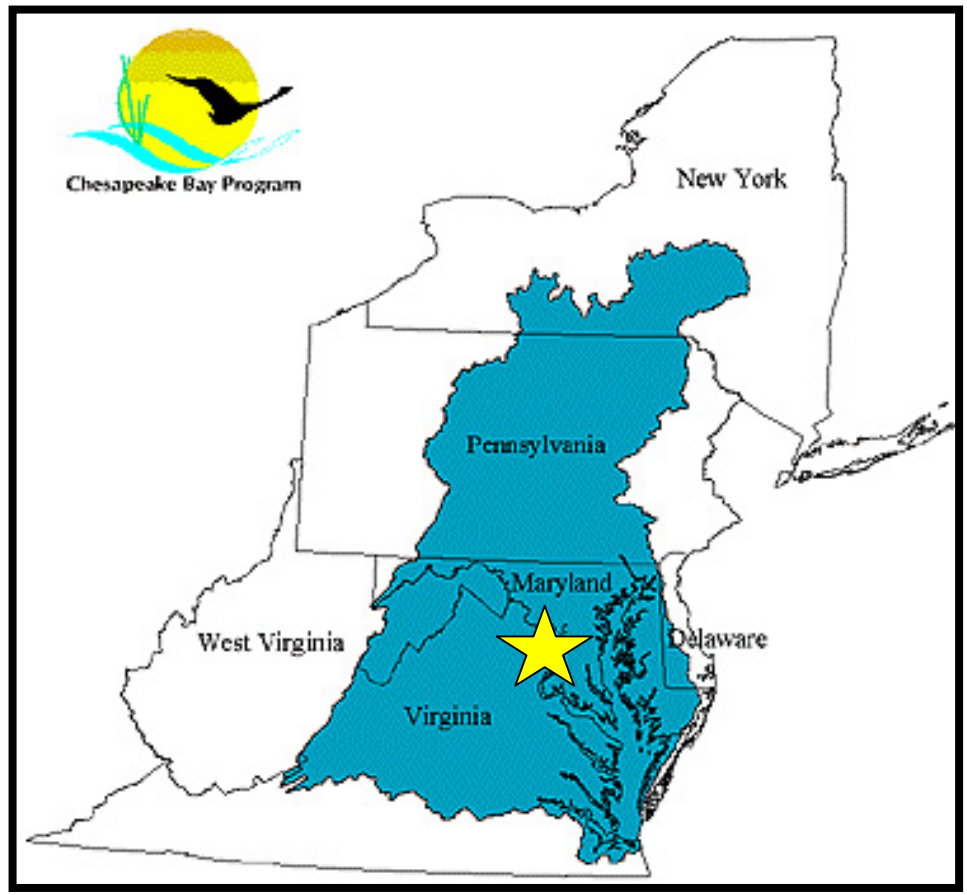
Anacostia Watershed:

- Total basin area of 170 square miles.
- Twenty-five square miles in the District.
- Supports an abundance of wildlife seldom found in urban settings.
- Use is 57% urban.



Chesapeake Bay Watershed

- The Chesapeake Bay watershed has a total basin drainage area of 64,000 square miles.
- The watershed covers 6 states and the District of Columbia.
- The watershed nourishes a diverse population of fish, wildlife and waterfowl.
- It is estimated that by the year 2000 the population within the watershed area will exceed 16 million.



Chesapeake Bay Water

What are the three types of water?

- Freshwater: Which contains less than 0.5 ppt salt.
- Saltwater: Average contains 33 ppt salt.
- Brackish water: Is between 0.5 to 30 ppt salt.

The Chesapeake Bay is considered an Estuary.

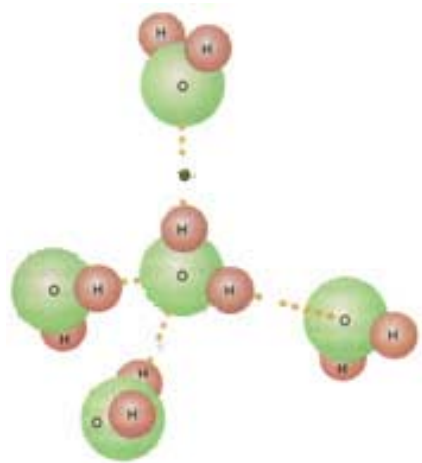
- Freshwater: Susquehanna river supplies 50%, the Potomac 18% remaining comes from other tributaries.
- Saltwater: 100% comes from the Atlantic Ocean, which makes up half of the total water volume of the Bay.

Saltwater + Freshwater = Brackish water

Chemical Properties of H_2O

Dissolved Gases:

- Dissolved Oxygen
- Carbon Dioxide



Organic Matter:

- Biological waste from humans and animals.
- Leaves and plant matter.

Inorganic Matter:

- Fertilizers and other land run-off.
- Components used in the processing of domestic sewage.

Physical Properties of H_2O

Salinity:

- A measure of the total amount of dissolved salt (ions) in seawater. Often expressed as part per thousand (o/oo).
- Salinity of Bay is variable seasonally and annually.

Circulation:

- Functions to transport plankton, fish eggs, shellfish larvae, sediments, dissolved oxygen, minerals and nutrients throughout the Bay.

Temperature:

- Changes in temperature can alter the rate of biological and chemical reactions.
- Bay is shallow does not hold heat well.

Water Quality

Why is water quality important?

- Reproduction
  - –Fish and other aquatic organisms need high water quality.
- Development
  - –Normal development of larvae, plankton and fish eggs.
  - –Poor quality may result in abnormalities or death.
- Survival
  - –Essential for survival of young.
  - –Good quality increases community diversity.

Chesapeake Bay Habitats

What is a habitat?

- An area that provides food, water, cover and nesting or nurseries to plant and animal communities.

What type of habitats do we find in the Chesapeake Bay region?

- Hardwood Forest: Upland buffer areas.
- Tidal Marshes: Important breeding and nursery area. Help to trap sediments and nutrients.
- Wetlands: Transition zone between uplands and water. Function to remove nutrients and pollution.

Pelagic Zone: Open water zone.

Plants and Animals

Freshwater

Plants primarily filamentous algae, in larger streams will find some SAV and some emergent vegetation.

Hydrilla verticillata

Highly variable depending on specific location. Thousands of animal species.

Agelaius phoeniceus

Brackish

Much more emergent vegetation and planktonic algae. Plants have halophytic adaptations.

Zostera marina

Most adapted to aquatic environment. Many residents are temporary or migratory.

Callinectes sapidus

Aquatic Animal Life

Freshwater: Some of the more common organisms include: sunfish, bass, killifish and catfish

Brackish: Some of the more common organisms include: bass, white and yellow perch, blue crabs and oysters

Marine: Some of the more common oceanic organisms include: blueback herring, American and hickory shad, black seabass, striped bass, shrimp, oysters and blue crabs.

Chesapeake Bay Ecosystem

What is an ecosystem?

A community of organisms and the nonliving physical environment.

Interdependence:

Mutually dependent for survival.

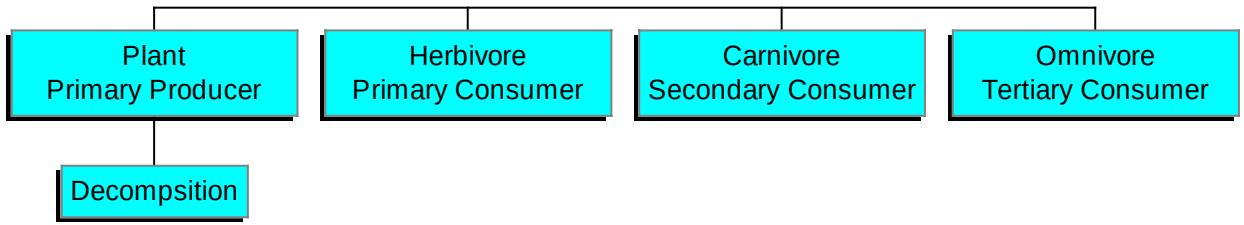
– Predator Prey relationship.

Food Production:

Photosynthesis (plants and some bacteria).

Food webs and chains:

Simple Food Chain



Protecting the Bay

Watershed approach:

Efforts by several states to improve the quality of the water that ultimately enters the bay. These efforts focus on problems such as fertilizer run-off, solid waste and sewage systems and a variety of other regional problems.

Local efforts:

Each individual in the District of Columbia can contribute to the cleanup of the Chesapeake Bay watershed. Local efforts are primarily concerned with the Anacostia and Potomac rivers. By doing simple things such as recycling, wise use of water, and keeping storm drains clean we can all make a difference.